



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,836	05/26/2006	Christian Lennartz	2090824/USOPCT	7081
22850	7590	05/01/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
WILSON, MICHAEL H				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
05/01/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

# Office Action Summary

**Application No.**

10/580,836

**Applicant(s)**

LENNARTZ ET AL.

**Examiner**

MICHAEL WILSON

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 20060526
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claim 4-6, 8, and 10 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Regarding claim 4, Formulae (I) to (III) of claim 1 define mononuclear platinum(II) complexes. Therefore the recitation in claim 4 that the complexes of claim 1 are mononuclear complexes fails to further limit the parent claim.

Regarding claims 5 and 6, the claim recites the light-emitting layer comprises a complex of claim 1 (formulae (I) to (III)) as an emitter molecule. However claim 1 recites an OLED with a complex of formula (I) to (III) as an emitter molecule. The light-emitting layer is by definition the layer containing an emitter molecule, given that claim 1 recites the complex of formulae (I) to (III) is an emitter molecule in an OLED it is unclear how claims 5 and 6 further limits independent claim 1. Additionally while claims 5 and 6 are not identical they appear to be substantial duplicates. Applicant is advised that should claim 5 be found allowable, claim 6 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Regarding claims 8 and 10, both claims fail to further limit the previous claims because claim 1 recited an OLED and dependent claims 6 and 7 (from which claims 8 and 10 depend) recite that the OLED comprises a light-emitting layer.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2, 9, 11, and 12 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 2, the word "preferably" and the phrase "particularly preferably" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Regarding claims 9, 11, and 12, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rubner et al. (US 6,548,836 B1) in view of Che et al. (Solid-state emission of dicyanoplatinum(II) and -palladium(II) complexes of substituted 2,2'-bipyridines and 1,10-phenanthroline and x-ray crystal structures of isomorphous M(bpy)(CN)<sub>2</sub> (bpy= 2,2'-bipyridine; M = Pt, Pd).

Regarding claims 1 and 3-12, Rubner et al. disclose a solid state light-emitting device (OLED) comprising a light-emitting layer between two electrodes (column 3, lines 43-46). The reference discloses the light-emitting layer comprises a metal complex (column 3, line 66 to column 4, line 4, and lines 27-35). The reference also discloses that the metal complex may be a platinum complex and have polypyridine ligands such as phenanthroline (column 8 lines 33-42). The light-emitting layer may consist of metal complex (column 6, lines 5-22) or contain additives (column 5 lines 49-63). The disclosed device can be part of a display device such as a flat-panel display, computer screen or other item that requires illumination (column 1, lines 11-14). However, the reference does not explicitly disclose a complex of instant formulae (II) or (III) as the light-emitting complex.

Che et al. teach light-emitting complexes of instant formulae (II) and (III) (first paragraph of the article, page 3081). The reference teaches the complex of instant formula (II) wherein o, m, and n are 0 and R7 and R8 are CN, and the complex of instant formula (III) wherein p and q are 0 and R12 and R13 are CN (page 3083, second column, first three lines of the first full paragraph). The complexes are taught to be strongly emissive in the solid state (page 3083, second column, first three lines of the first full paragraph).

It would be obvious to one of ordinary skill in the art at the time of the invention to use the platinum(II) complexes of Che et al. in the device of Rubner et al. One of ordinary skill in the art would reasonably expect such a combination to be suitable given that Che et al. teach the complexes are luminescent in the solid state and Rubner et al. disclose platinum(II) and polypyridine complexes are both suitable (bipyridine and phenanthroline are both considered to be polypyridine ligands). Further it is well known in the art that photoluminescent complexes will also emit light when an appropriate electrical current is passed through them,  $\text{Ru}(\text{bpy})_3^{+2}$  used by Rubner et al. (column 6, line 2) is a well known photoluminescent complex, which would also give one of ordinary skill in the art a reasonable expectation of success. One of ordinary skill would be motivated to try and use the complexes of Che et al. in the device of Rubner et al. by the teachings of Che et al. that the complexes are strongly emissive.

Regarding claim 2, modified Rubner et al. disclose all the claim limitations as set forth above. Additionally while the reference does not disclose a complex of instant

formula (I) the claim does not limit the platinum(II) complex to a complex of instant formula (I). Therefore the claim limitations are met for the reasons set forth above.

7. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rubner et al. (US 6,548,836 B1) in view of Pawlowski et al. (Synthesis, structure, optical properties and theoretical studies of  $\text{Pt(P-P)(CN)}_2$  with P-P = 1,2-bis(diphenylphosphanyl)benzene and 2,2'-bis(diphenylphosphanyl)-1,1'-binaphthyl – luminescence from metal-to-ligand charge transfer and intraligand states.).

Regarding claims 1, 2, and 4-12, Rubner et al. disclose a solid state light-emitting device (OLED) comprising a light emitting layer between two electrodes (column 3, lines 43-46). The reference discloses the light-emitting layer comprises a metal complex (column 3, line 66 to column 4, line 4, and lines 27-35). The reference also discloses that the metal complex may be a platinum complex (column 8 lines 33-42). The light-emitting layer may consist of the metal complex (column 6, lines 5-22) or contain additives (column 5 lines 49-63). The disclosed device can be part of a display device such as a flat-panel display, computer screen or other item hat requires illumination (column 1, lines 11-14). However, the reference does not explicitly disclose a complex of instant formula (I) as the light-emitting complex.

Pawlowski et al. teach complexes of instant formula (I) (abstract). The reference teaches complexes of instant formula (I) wherein R3 to R6 are phenyl, R1 and R2 are CN, and X is benzene or binaphthylene (second column page 4242). The reference teaches the complexes are luminescent in the solid state (figures 1 and 2, page 4243).

It would be obvious to one of ordinary skill in the art at the time of the invention to use the platinum(II) complexes of Pawlowski et al. in the device of Rubner et al. One of ordinary skill in the art would reasonably expect such a combination to be suitable give that Pawlowski et al. teach the complexes are luminescent in the solid state and Rubner et al. disclose that platinum complexes are suitable as light-emitting material. Further it is well known in the art that photoluminescent complexes will also emit light when an appropriate electrical current is passed through them,  $\text{Ru}(\text{bpy})_3^{+2}$  used by Rubner et al. (column 6, line 2) is a well known photoluminescent complex, which would also give one of ordinary skill in the art a reasonable expectation of success. One of ordinary skill would be motivated to try and use the complexes of Pawlowski et al. in the device of Rubner et al. by the teachings of Pawlowski et al. that the complexes are luminescent in the solid state emissive.

Regarding claim 3, modified Rubner et al. disclose all the claim limitations as set forth above. Additionally while the reference does not disclose a complex of instant formulae (II) or (III) the claim does not limit the platinum(II) complex to a complex of instant formulae (II) or (III). Therefore the claim limitations are met for the reasons set forth above.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



Kunkely et al. (Photoluminescence of  $[Pt^{II}(4,7\text{-diphenyl-1,10-phenanthroline})(CN)_2]$  in solution), and Che et al. (Novel luminescent platinum(II) complexes. Photophysics and photochemistry of  $Pt(5,5'\text{-Me}_2\text{bby})(CN)_2$  ( $5,5'\text{-Me}_2\text{bby} = 5,5'\text{-dimethyl-2,2'-bipyridine}$ )), both disclose luminescent platinum(II) complexes. However neither reference discloses a light-emitting device or the solid state properties of the complexes.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/580,836

Page 9

Art Unit: 1794

/D. Lawrence Tarazano/

Supervisory Patent Examiner, Art Unit 1794

MHW